

# Cycle helmets – when is legislation justified?

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## Abstract

*The issue of mandatory cycle helmets is highly contentious. The aim of this paper is not to argue for or against legislation but to suggest criteria on which the debate should focus. This is done by attempting to answer the question: 'What criteria must be met before cycle helmet wearing is enforced?' Consideration is given to principles, precedents and consequences and four criteria are suggested. The criteria are to do with effectiveness, personal liberty, public acceptability and the promotion of the public health benefits of cycling.*

## Introduction

It has been estimated that in Britain today substantially more years of life are gained from the benefits of exercise taken by cycling (compared to leading a sedentary lifestyle) than are lost by cyclists being killed in accidents (1). Nonetheless cycling is perceived as a dangerous activity, and apart from motorcycling, cyclists are more likely to be killed per kilometre travelled than users of motorised transport. They are, for example, around 12 times more likely to be killed per kilometre travelled than car occupants. Roughly 70 per cent of deaths to cyclists are due to head injury. One widely quoted study on the effectiveness of cycle helmets suggests that wearing a cycle helmet reduces the risk of head and brain injury by over 80 per cent (2). An unavoidable criticism of all studies comparing helmet-wearing cyclists with non-helmet-wearing cyclists is that individuals who chose to wear them may also differ in other ways relevant to their risk of suffering a head injury. For example, they may be more cautious cyclists. However, the weight of medical opinion views cycle helmets as an effective means of preventing head injury and doctors have generally called for the wearing of cycle helmets to be promoted (3,4), and some have called for them to be made compulsory (5,6). In some states in Australia and North America cycle helmet wearing

is compulsory. However, a recent report from the Policy Studies Institute (7) concluded that the weight of evidence was not only against compulsory helmets but even against the encouragement of cyclists to wear them. The report suggested that encouraging helmet use may encourage cyclists to take greater risks, a phenomenon known as 'risk compensation'. The report also noted that although in the Australian state of Victoria the enforcement of helmet wearing was associated with a 40 per cent reduction in head injuries it was also associated with a large reduction in the number of people cycling (8) and occurred at the time of a general improvement in road safety. In other words the compulsory wearing of helmets *per se* was not obviously related to lower rates of head injury. The issue of whether or not the wearing of cycle helmets should be promoted, never mind enforced by law, is contentious.

The aim of this paper is not to argue for or against compulsory cycle helmets and nor is it to provide a formula into which 'the facts' can be fed and out of which comes the answer. The aim is to suggest a set of criteria on which the debate between opponents and proponents of mandatory cycle helmets should focus. I do this by trying to answer the question: 'What criteria must be met before helmet wearing should be enforced?' I identify criteria by following a broad framework, or 'ethical map'. This involves the consideration of three areas: principles, precedents and consequences. Having suggested the key principles involved, precedents are examined to determine how the principles were (or perhaps were not) applied in similar cases, and how conflicts over the application of the principles were resolved. Finally the possible consequences of making cycle helmets compulsory are examined to determine if any conflict with the principles should influence how the principles are applied.

## Principles

'Prevention is better than cure' is a deceptively attractive assertion. However, attempts at prevention may do more harm than good (9). In his book,

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*Strategy of Preventive Medicine*, Geoffrey Rose asks: 'How good must the evidence be before an intervention is promoted' (10)? His answer is: 'That depends on the consequences of making the wrong decision, whether positive or negative ...'. It demands a judgment on the potential harm and benefits of the intervention. For example, it may be acceptable to promote an intervention where the evidence for benefit is incomplete so long as there is very good evidence that the intervention will do no harm. With regard to compulsory measures Professor Rose argues that:

'The situation is basically different where individuals have no choice to reject a preventive measure. They can buy toothpaste with or without added fluoride, but if fluoride is added to the drinking water they can hardly avoid imbibing it ... . We should expect a higher level of scientific evidence and popular acceptability for measures which are imposed and not chosen by recipients' (11).

However, even when a measure has been shown to be effective in preventing damage to health clearly it does not automatically follow that it should be enforced. Here the principles of the English utilitarian philosopher, John Stuart Mill, described in his essay, 'On Liberty' (12), are relevant. One of Mill's aims in writing the essay was to fix a limit to the 'legitimate interference of collective opinion with individual independence' (13). To do this Mill made the distinction between self- and other-regarding actions. Self-regarding actions are those which merely affect the individual and cause no harm to others. Other-regarding actions are those actions of an individual which also affect others. Mill stated that:

'... the only part of the conduct of any one, for which he is amenable to society, is that which concerns others. In the part which merely concerns himself, his independence is of right absolute. Over himself, over his own body and mind, the individual is sovereign' (14).

'... for such actions as are prejudicial to the interests of others, the individual is accountable and may be subjected to either social or to legal punishment, if society is of the opinion that the one or the other is a requisite for its protection' (15).

Mill specified an important exception to these rules: children must have their conduct regulated by others.

In attempting to use Mill's principles there is one very obvious difficulty – how does one distinguish between self- and other-regarding actions? Mill has been accused of attempting to separate the inseparable – no human is an island. Mill recognised this difficulty and attempted to make a distinction

between those individual actions whose 'inconvenience society can afford to bear, for the sake of the greater good of human freedom' (16), and those for which social or legal punishment are necessary for the protection of others and society. Arguably Mill's principle was not intended to absolve us from deciding cases on their merits. The advantages and disadvantages of interfering with the liberty of individuals should be weighed up on each occasion (17). This seems to be implicit in Professor Rose's assertion that the situation is 'basically different' when preventive measures are imposed rather than simply promoted. Both the promotion and imposition of preventive health measures require very good evidence of non-maleficence with respect to a population's health. However, in a broader sense imposition always involves some degree of maleficence, the loss of liberty, and the onus is to demonstrate that the health benefits from the intervention outweigh the disbenefits of lost liberty.

I suggest therefore that in the debate over mandatory cycle helmets there are two key principles. The first principle is that there must be a very high level of scientific evidence that the intervention produces benefits for health for those individuals on whom the intervention is imposed. In the case of cycle helmets this means a high level of evidence that helmets prevent serious and fatal head injury in accidents. The second principle is that the imposition can only be justified for adults on the basis of clearly demonstrated benefits to society and others. Therefore mandatory cycle helmets cannot be justified simply to protect individual adult cyclists and it must be shown that not wearing a helmet is prejudicial to the interests of society and others. To what extent these principles are generalisable to other mandatory preventive health measures I will discuss in the concluding section of this article.

How are these principles to be applied? By what process can 'loss of freedom' be weighed against the 'benefits to society and others'? To try and answer these questions I examine in the next section the process by which seat-belt wearing in the UK became mandatory.

## Precedents

There are two obvious precedents in Britain to mandatory cycle helmets, these are mandatory motorcycle helmets and mandatory seat-belt wearing. I look at the debate over compulsory seat-belts because this was the most recent and generated a huge amount of media coverage. I used the index of *The Times* newspaper to identify articles and letters.

In 1965 it became compulsory for all new cars sold in Britain to have front seat-belts fitted. However, by the early 1970s it became clear that publicity campaigns had failed to achieve seat-belt-wearing levels much above 20 per cent and there

were calls for compulsory seat-belt wearing (18). Largely due to fierce opposition it took five attempts before legislation was finally passed in 1981 (19).

The debate on compulsory seat-belts was largely confined to three areas: the effectiveness of seat-belts in reducing casualties; infringement of personal liberty; and problems of enforcing compulsory seat-belts. Concern was expressed that in some situations, such as a car falling into water or bursting into flames, wearing a seat-belt could make it more difficult to escape. However, by the late 1970s even most opponents of compulsory seat-belts agreed that in most situations they were effective in reducing death and serious injury. In the few months before the seat-belt legislation was passed the argument that wearing a seat-belt might give people a false sense of security and encourage them to drive less carefully gained some coverage (20). However, it seems not to have seriously challenged the view that seat-belts were highly effective in reducing injuries. Arguments over the problems of enforcement continued but by far the greatest area of contention was on the issue of personal liberty.

The central principle that opponents of compulsory seat-belts were defending was expressed thus: 'The whole of our concept of the law is that of preventing people from harming others or the state ... the wearing of seat-belts does not affect the state or others' (21). This argument follows the distinction of self- and other-regarding actions of Mill. Proponents of seat-belts tended to use the same distinction but argued that not wearing a seat-belt did affect others. For example, the potential saving to the health service in 1981 of compulsory seat-belts was estimated to be 150,000 bed-nights a year (20). There were also the costs of death and injury that could be prevented by seat-belts to family, friends and work. The fact that 'other-regarding actions' could be used to argue for compulsion in many areas of life was not missed by opponents of compulsory seat-belts. 'Overeating could cost lives and too much sex could cause heart trouble. Why not have a law to say that people should not have too much sex?' (19). The answer, according to proponents, was that there is a balance between the degree of infringement of personal liberty and the amount of benefit to be gained. 'It [compulsion] may be so used when the gain is large and direct and the imposition slight' (22).

### Widespread agreement

What finally carried the day for the proponents of compulsory seat-belts was the widespread belief, which was held by the majority of motorists, that the potential benefits were large and the infringement of personal liberty small. The balance was perceived to be strongly in favour of compulsion.

The *third criterion* I suggest is that there must be widespread agreement, by a majority of the general

public and ideally by a majority of cyclists, that the potential benefit to society and others of compulsory cycle helmets outweighs the infringement of personal liberty.

### Consequences

Assuming that cycle helmets are effective, the most obvious expected benefit of mandatory helmets would be a reduction in serious and fatal head injuries to cyclists in accidents. The most obvious disbenefit would be the loss of personal freedom entailed. The aim of this section is to determine if there are other less obvious benefits or disbenefits which should be considered. It seems to me that there are potentially at least three additional disbenefits. These are: the problems of enforcing a law mandating the use of cycle helmets; that cyclists wearing helmets may feel safer than if not wearing a helmet and so take greater risks; and that mandatory cycle helmets may be a deterrent to cycling.

The potential problems of enforcement were raised by the objectors to mandatory seat-belts. In fact their objections over enforcement proved unfounded and there was a very high compliance with the law from early on. In retrospect this is not surprising because by the time it became law there was widespread support for it. It does, however, suggest another reason for the criterion that there should be widespread agreement, ideally by a majority of cyclists, that the benefits of mandatory helmets outweigh the disbenefits: namely, to minimise the problems of enforcement.

It is easy to give examples, that many of us will have experienced, of 'risk compensation'. For example, driving more slowly in a car with poor brakes, and conversely driving faster in a car which is quiet and feels stable at speed compared to one which isn't and doesn't. It is a plausible suggestion that on average a cyclist wearing a helmet feels a little safer than when not wearing a helmet and will therefore take slightly greater risks when cycling with a helmet on. This suggestion has been used to argue against even the promotion of cycle helmet use (7). It is possible that although cycle helmets may protect the individual against some head injuries in an accident, their enforcement could lead to an increase in the rate of accidents because of risk compensation. Whether or not head injury rates to cyclists were reduced would then depend on the balance between the increased protection in individual accidents and the increase in accident rates. I do not know of any studies which have seriously tackled the issue of risk compensation with regard to cycle helmets. However, it is surely an issue on which good data must be available before enforcement can be enacted. Because of this I suggest that the first criterion (requiring a high level of scientific evidence that helmets prevent serious and fatal head injury in accidents) should be more specific. There must be a

high level of scientific evidence that helmets reduce the rate of head injuries to cyclists.

Finally it is possible that mandatory cycle helmets would act as a deterrent to cycling. There is some evidence that levels of cycling fell following helmet-wearing legislation in the state of Victoria in Australia (8). The promotion of cycling is seen by many as a public health goal (1). Increased levels of cycling could bring public health benefits in two main areas: increased levels of physical fitness with attendant benefits; and improvement in the quality of urban environments (assuming that increased levels of cycling resulted in a corresponding decrease in motorised transport). If mandatory cycle helmets made it harder to encourage greater use of the bicycle, or indeed resulted in reduced levels of cycling from its already low level in Britain, these in my view should count as lost potential and lost real public health benefits respectively. The fourth criterion I suggest therefore is that there must be good evidence to suggest that compulsory helmet wearing would not make the public health benefits of increased levels of cycling harder to obtain.

## Discussion

I have suggested above that the following criteria should be met before cycle helmets are mandatory.

1. There must be a high level of scientific evidence that cycle helmets are effective in reducing the rate of head injury to cyclists (evidence which takes into account any possible detrimental effect of 'risk compensation').
2. The benefits to society and others of mandatory cycle helmets must be convincingly demonstrated; mandatory cycle helmets cannot be justified simply to protect individual adult cyclists. However, mandatory cycle helmets for children may be justified for their own protection.
3. There must be widespread agreement, ideally by a large majority, that the potential benefits of compulsory cycle helmets outweigh the infringement of personal liberty and other disbenefits.
4. There must be good evidence to suggest that compulsory helmet wearing would not make the public health benefits of increased levels of cycling significantly harder to obtain.

It was argued that we should expect a high level of scientific evidence before a preventive health measure is enforced. However, situations do exist in which poor or incomplete evidence is used as a basis for enforcement. Thus there are stringent standards laid down by the European Union for water quality even though the evidence that exceeding many of these standards is harmful to health is at best incomplete. This is the case for nitrates, for example, where there is a hypothesised link with cancer but really no good evidence linking environmental or

dietary exposure to cancer (23). Despite this a tight standard is applied to nitrate levels in water, and it has been argued that 'departures from biological normality should not be tolerated unless there is a good and positive reason for doing so' (23). It seems to me that the level of scientific evidence required to support enforcement is dependent upon the nature of the threat to the well-being of others. For example, potentially harmful substances in the water supply pose a direct threat to the health of millions of people. In the cases of seat-belts or cycle helmets the nature of the 'threat' to others is much less direct. Proponents of seat-belts, for example, pointed to the cost and time of treating injuries which could have been prevented by seat-belt wearing as justification for enforcing seat-belt use. This type of justification has been referred to as 'the conserving of the common resource'.

The validity of using 'conserving of the common resource' as a justification for enforcing preventive health measures has frequently been questioned. It is argued that its logical extension is that any type of behaviour that increases the chance of an individual calling upon the 'common resource' should be prevented (24). Thus it would be logical to legislate to prevent people smoking, to make sedentary people take more exercise and to prevent people practising dangerous sports such as rock-climbing and potholing. This *reductio ad absurdum* is appealing, but in my view it is missing the point. It assumes that the justification for enforcement rests solely on demonstrating disbenefits to others (such as avoidable use of the common resource). This assumption is wrong. The justification lies in showing that on balance the benefits of legislation clearly outweigh the disbenefits. This distinction was frequently referred to in the debate over compulsory seat-belts. For example, it was argued that compulsion 'may be so used when the gain is large and direct and the imposition slight' (22). Similarly it was argued that sports such as skiing or potholing might be essential to an individual's idea of a good way of life where as driving without a seat-belt did not fall into that category (25). The problem with this line of argument is that it is messy. John Stuart Mill himself suggested that there is a balance to be struck between regulating individual behaviour for the protection of others and the negative consequences of regulation. Yet how is this balance to be assessed? There is not an objective measuring device on which the benefits can be weighed against the disbenefits.

I believe that the most legitimate scale on which the benefits and disbenefits of introducing preventive health legislation can be weighed is the collective judgment of the people within the society in which the legislation will be applied. In a democracy this will usually mean the collective judgment of their elected representatives (the use of a referendum being an obvious exception). Some measures, such as food hygiene or water quality regulations, are likely to

be uncontroversial and to be seen by the majority of the public as a role government should be pursuing on their behalf. Controversy is only likely to arise where cases occur in which the regulations or their application are perceived to have fallen short of protecting the public's health. Other measures, such as the enforcement of seat-belt and cycle helmet wearing may be very controversial. In this situation it is right that there should be widespread public debate and consultation before any legislation is drafted. It is worth noting that although the seat-belt legislation in the UK which finally became law was introduced by the conservative government of the day, Members of Parliament were allowed a free vote on the issue.

An issue such as mandatory cycle helmets, or any other proposal to enforce a behaviour on health grounds, cannot be reduced to a formula into which the 'facts' are fed and out of which comes the answer. However, it is possible to lay down guidelines for a debate and to this end four criteria have been suggested which must be met before legislation to enforce cycle helmet wearing would be justified. The criteria derived illustrate that whether cycle helmet wearing should be mandatory goes much further than whether cycle helmet wearing by cyclists leads to a fall in head injury and death rates in accidents. There are also issues of personal freedom, public acceptability and the benefits that might be lost if cycling becomes less popular.

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